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REMARKS

This response addresses the Office Action of 3/28/2006.

Claims 1, 4-5, and 8 remain in the case.

Claims 3 and 7 are canceled. No new claims have been added.

Claims 1, 3, 5 and 7 were rejected under 35 U.S.C. 102(e) as being anticipated by Kang et al. (US 2003/0178710 A1), here after "Kang."

On page 4 of the office Action claims 1, 3-5, 7 and 8 were rejected under 35 U.S.C. 103(a) as unpatentable over Shim et al. (US 6,531,784), here after '784, in view of Kang.

Claim 1 is amended as follows:

1. (currently amended) A die containing package comprising:  
a die defining electrical die contacts,  
a substrate defining first substrate contacts,  
flattened electrical conductive balls attached to the die contacts and making electrical connection thereto,  
electrical conductive runs on the substrate connecting the first substrate contacts to second substrate contacts, *wherein the second substrate contacts are located on the substrate opposite the first substrate contacts*,  
electrically conductive wires with first ends making electrical connections to the first substrate contacts, wherein the wires are formed to run substantially parallel to the surface of the die, and wherein the other ends are horizontally attached to the flattened balls.

As amended claim 1 contains the limitation of claim 3 (now canceled). The **em-  
boldened** portion (the amendment to claim 1) above describes the location, on the sub-  
strate, of two contacts, where the first contact is on one side of the substrate, say the left

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side, and the other contact is on the opposite side, say the right side. An etched run connects these two contacts, and as shown in original FIG. 6, the etched run crosses, from one side of the substrate to the other side, under the die.

No new matter is added, see present application's FIGs. 3-6, where the etched runs traverse under the die to contacts on opposite sides of the substrate. For example, in FIG. 3, the wire bond 117 connects a pad 111 on the chip 108 to contact 104 on the substrate. FIG. 5 shows the etched run on the substrate that connects contact 104 to contact 123. Note that contacts 104 and 123 are on opposite sides of the substrate and on opposite sides with respect to the chip 108. This configuration is an example of what is meant by the phrase "second substrate contacts are located on the substrate opposite the first substrate contacts."

A similar limitation is added to the method claim 5 that corresponds to the apparatus claim 1.

The above distinction, re: the two substrate contacts, could be made more clearly by further amending claim 1 to define the two opposite sides of the substrate. Such an amendment would recite the contacts on the substrate, the etched runs connecting them, both with respect to the substrate/die and the contacts as shown in original drawings FIGS. 3-6. It would seem this is not necessary, but if it would help, such an amendment can be generated.

The Examiner's argument rejecting claim 3 now applies to amended claim 1 (and to amended claim 5). On page 3, item 7 rejected claim 3 and states that, "Kang shows that the second substrate contacts are located on the substrate opposite the first substrate contacts (e.g. right side vs. left side)." The Examiner seems to be referring to the two substrate contacts, one on the right side and the other on the left side, the "right side vs left side" of the substrate. But, Kang simply does not do so.

At the top of page 3 of the Office Action the Examiner (rejecting original claim 1) identifies in Kang first contact/pads defined by 33/38 on the substrate, and second

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contact/pads defined by 33/44 on the substrate. The Examiner's drawing on page 3 of the Office Action shows contact/pads 44/33 on the left side of the substrate 31 and item 38 (a bonding wire) connected to an unreferenced etched run on the right side of the substrate. Later, Kang, in his fig. 9, shows both bonding wires 44 and 38 coming from the left side and both connected to "the wiring pattern 33" (the etched runs). Note, both leads are shown on the left side whereas Kang's fig 3 (and that of the Examiner on page 3) shows items 44 and 38 coming from opposite sides of the die. In fact Kang is simply using item 44 generically as any lead from the top die (40) and item (38) as any lead from the bottom die 34. Kang is not distinguishing sides of the dies, he is distinguishing the top die from the bottom die.

The Examiner might be equating Kang's item 33 as the etched run connecting the first and second substrate contacts - a limitation in claim 1. However, Kang is not suggesting in the Office Action drawing on page 3 that the "wiring pattern" 33 is electrically shorting lead 44 from the top die to the lead from the bottom die. Item 33 is a "wiring pattern," that is a collective reference to all the etched runs. No where does Kang show or describe a lead from a die connecting to a first substrate contact that is connected via an etched run to a second substrate contact located on the opposite side of the substrate. Please see Kang's figs. 7, 8 and 9 and paragraphs 42-45 on page 2.

In claim 1 as amended the first and second substrate contacts are located on opposite sides of the substrate and connected by an etched run, see original FIG. 6. Kang **does not describes or suggests any such feature.**

On page 7, item 16, of the Office Action the Examiner rejects claim 7 stating that "...Shim shows that the second substrate contacts are located on the substrate opposite the first substrate contacts." Again, no specific reference is offered.

As with Kang, Shim does not show first and second substrate contacts on opposite sides of the substrate electrically connected by etched runs. All the bond wires connect to contacts and etched runs on the same side of the substrate. This is the same distinction made above re: Kang.

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I have tried to make the distinction very clear, perhaps we are not understanding each other, I would appreciate the Examiner calling me to discuss the matter. Perhaps, I am mis-understanding something. Please note that the present amendments do not change the limitations of claims 3 and 7 that were added to claims 1 and 5.

With respect to claims 4 and 8, the location of the second substrate contact opposite the first substrate contacts allows different pin out die packages to be used. As claimed in claims 4 and 8 and as shown in original application FIG. 6 (and other FIGs.) the etched runs on the substrate run under the die to the opposite side of the substrate. This is to accommodate different package pin outs which is an objective of the present invention.

On page 6, paragraph 14 and on page 7 paragraph 17, the Examiner states that Shim "shows that the second substrate contacts are located to accommodate a pin out different from the die. No reference in Shim or in Kang is cited. But, neither Shim nor Kang discuss or suggest substrate contacts arranged to accommodate a different pin out as does the present invention. The present invention has a stated objective of providing a substrate that can be used to mount a "die-up" die in a "die-down" package, and the cross over etched runs provide the contact connection accommodations to do so. There is no suggestion in Kang or Shim to accommodate a different pin out and neither Kang nor Shim provide such cross overs or other means to accommodate different pin outs.

Please charge any additional fee occasioned by this paper to our Deposit Account No. 03-1237.

Respectfully submitted,



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